APPENDIX Q:

Rapid Watershed Assessment

Keweenaw Bay Indian Community Rapid Watershed Assessment News

An Ojibwa Poem

Anishinaabekwe, the Daughters,
You are the keepers of the water.

I am Nibs...water..the sacred source,
The blood of Aki, Mother Earth,
The force filling dry seeds to great bursting.

I am the wombs cradle.
I purify.
Nibi, the lifegiver, forever the Circle's charge
I have coursed through our Mother's veins.

Now hear my sorrow and my pain
In the river's rush, the rain.

I am your grandchildren's drink.
Listen, Daughters, always.

You are the keepers of the water.
Hear my cry, for the springs flow darkly now
Through the heart of Aki.

In the fall of 2007, the Keweenaw Bay Indian Community, working in partnership with the Upper Peninsula Resource Conservation and Development Council, the USDA Natural Resources Conservation Service, the Baraga County Road Commission, the Baraga Conservation District, and the Western Upper Peninsula Planning and Development Region (WUPPDR) began a year-long project to assess the natural resource concerns of all the watersheds that originate and flow across the KBIC Reservation. The project is called the "Keweenaw Bay Rapid Watershed Assessment". Rapid Watershed Assessments (RWA) provide guidance of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders within a watershed. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals. The project study area is approximately 313 square miles with 92 square miles being within the KBIC L'Anse Reservation boundary. During the first phase of the project, staff from WUPPDR are collecting information on land use, land cover types, soil conditions, climate, and socio-economic data. They are also working with staff from the Baraga County Road Commission to survey approximately 115 road crossings within the watershed area. Road crossings have the potential to significantly impact stream quality and fish passage due to erosion and perched culverts. Gathering input from the residents and stakeholders in the watershed regarding their views of priority natural resource concerns and opportunities is an important part of the process and a public meeting has been planned for this purpose (see page 6). The completed resource assessment will be a valuable tool for land owners, resource professionals, and community leaders.

Land Use	Acres	Percent
Agricultural	12019.2	6.0
Barren Land	200.3	0.1
Forest Land	168268.8	84.0
Urban	1201.9	0.6
Water	1602.6	0.8
Wetland	17027.2	8.5

Partners
U. P. Resource Conservation and Development Council

Keweenaw Bay Indian Community

USDA Natural Resources Conservation Service

Western Upper Peninsula Planning and Development Region

Baraga County Road Commission

Baraga Conservation District

The stream crossing at Zeba Creek was remediated with a new arched culvert with a natural bottom designed for fish passage and rock armoring of the creek's outlet below the culvert which dramatically curtailed erosion.

Land Ownership	Acres	Percent
Tribal	58880	29.4
State	15488	7.7
Federal	10048	5.0
Private	115985	57.9

KBIC Rapid Watershed Assessment Landowner Survey

What natural resource issues are most important to you? *(Check as many as you like)*

_____*Water quality* _____*Groundwater Protection* _____*Lake Levels*
_____*Wetland Protection* _____*Poor Land Use Practices* _____*Shoreline Development*
_____*Fish & Wildlife Habitat* _____*Invasive Species Control/Mgmt.* _____*Erosion Control*
_____*Unregulated Development* _____*Endangered/Threatened Species* _____*Forest Pests/Diseases*
_____*Forestry Management. Practices* _____*Other* _____

In your opinion, what are the top three needs/concerns in your community?

1. _____

2. _____

3. _____

Please return your survey to:

U. P. Resource Conservation & Development Council
780 Commerce Drive, Suite C
Marquette, Michigan 49855

2008

Rapid Watershed Assessment, Keweenaw Bay Indian Community

Western Upper Peninsula Planning & Development Regional Commission

10/1/2008

Table of Contents

Appendix A (Maps)

Acknowledgements

The Rapid Watershed Assessment (RWA) was completed in cooperation with USDA, Natural Resource Conservation Service, Upper Peninsula Resource Conservation and Development (RC&D), Western Upper Peninsula Planning & Development Region, Keweenaw Bay Indian Community, Natural Resource Department, Baraga Conservation District and County Road Commission.

Purpose

A RWA is a rapid assessment of a defined watershed project area. The RWA should take no longer than 8-10 months to complete. The information is general in nature and is not to be used as a plan, but rather an initial estimate of where conservation investments would best address the concerns within the watershed. This information should be a solid starting point for local stakeholders to use in a more detailed watershed planning effort.

A RWA has two main components, a watershed resource profile and an assessment matrix. The resource profile is compiled using Geographic Information System (GIS) where applicable and consisted of:

- Introduction
- Population Density
- Physical Description
- Precipitation
- Public Lands
- Land cover/Land use
- Soil Drain Classification
- Land Capability Class
- Common Resource Areas
- Local Resource Concerns

The assessment matrix summarizes current resource conditions and related maintenance costs within the watershed. The assessment matrix contains:

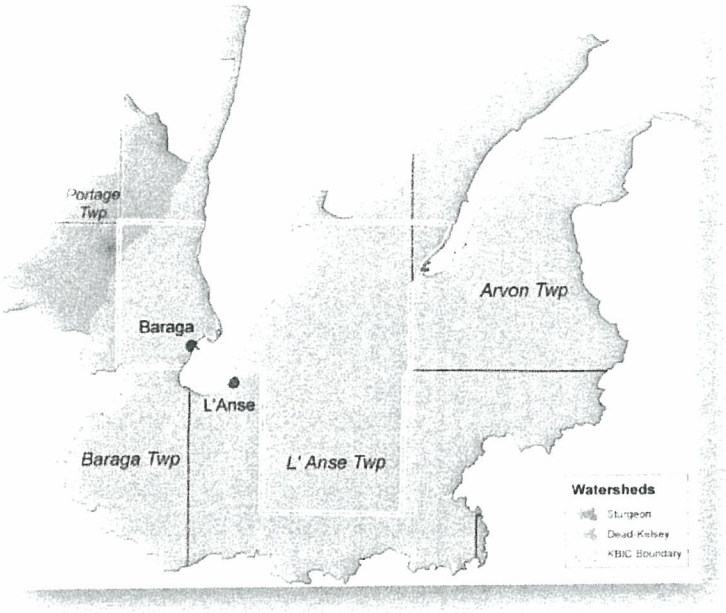
Current Condition Table – detailing the current level of conservation in the watershed.

Future Condition Table – identifying appropriate suites of conservation practices needed to deal with the primary resource concerns for each major land use.

Summary Table – summarizing the various costs associated with the resource management systems developed in the previous step.

Introduction

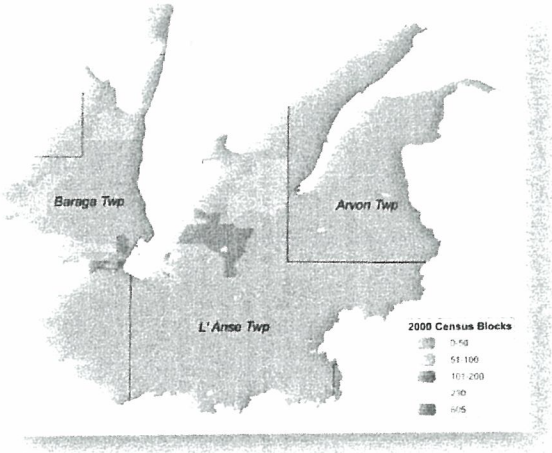
The Keweenaw Bay Indian Community (KBIC) Rapid Watershed Assessment project study area consists of two 8-digit Hydrological Unit Code (HUC) sub-basins, the Dead-Kelsey and Sturgeon Watersheds. Within these watersheds there are 9 sub watersheds which reference the 12-digit HUC. These watersheds are located within Baraga and Houghton Counties in the Western Upper Peninsula of Michigan. The majority of the area is within Baraga County, which drains into Lake Superior's Keweenaw and Huron Bays to the North. In addition, there are 4 townships located in the watershed.



Map 1: Base Map, Appendix 1

The total project area is 313 square miles, with 92 square miles of it being within the KBIC boundary. The greater part of the project (283 square miles) is within the Dead-Kelsey Watershed, the remaining 30 square miles is in the Sturgeon.

According to the 2000 Census, the population of the project area is 7,967, with 46% of that total being tribal members (see Chart 1). The majority of the non-tribal population is centralized within the Village limits of Baraga and L'Anse.



Map 2: Population, Appendix 2

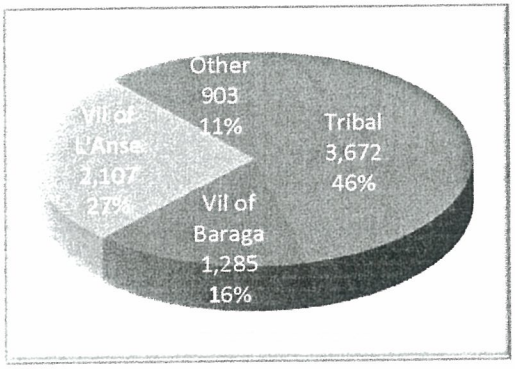


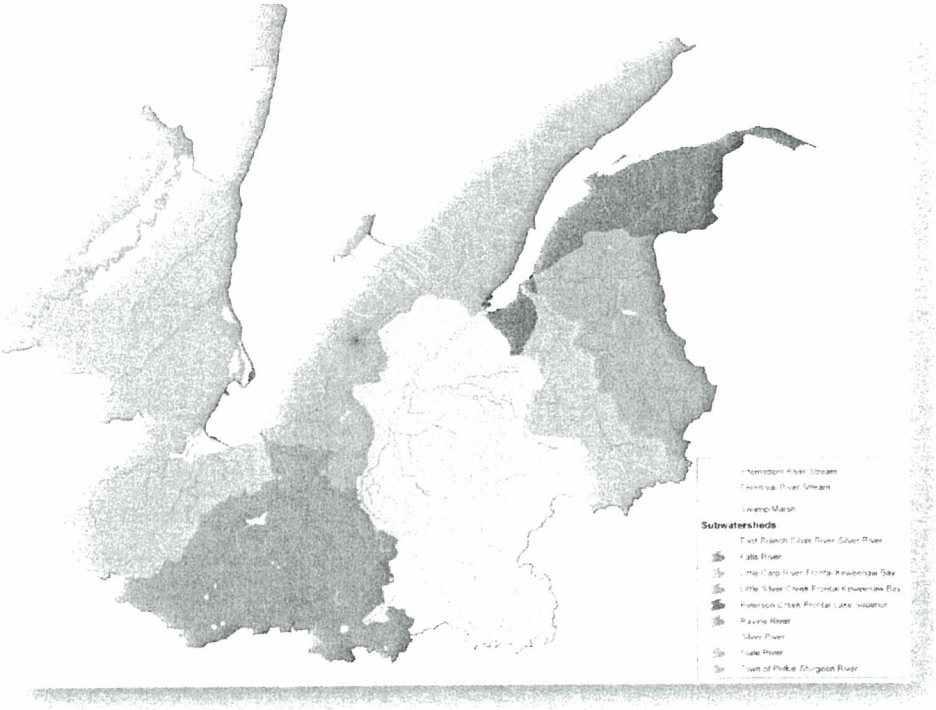
Chart 1: Population

Resource Profile

Physical Description

Sub-Basins and River Systems

The scope of this project incorporates 9 sub-basins. Within the 9 sub watersheds there are 16 perennial rivers and numerous intermittent stream systems. There are 257 miles of perennial rivers and 117 miles of intermittent rivers/streams. In addition, there are a total of 74 miles of coastline of Lake Superior. All but one water system drains into either Keweenaw or Huron Bay of Lake Superior. The Sturgeon River sub-watershed flows into Portage Lake, which is a tributary of Lake Superior. The other main rivers consist of the Silver, Slate, Falls and Ravine River that flow into Lake Superior.



Map 3: Sub Watersheds, Appendix 3

KBIC Rapid Watershed Assessment project area has an average annual precipitation of 32 inches (see Map 4).

Table 1: Watershed Sub-basins

Sub watersheds (HUC 12)	Acres	Square Miles	% of Total Watershed
East Branch Silver River-Silver River	20,200	31.5	10%
Falls River	30,047	46.9	15%
Little Carp River-Frontal Keweenaw Bay	37,999	59.37	19%
Little Silver Creek-Frontal Keweenaw Bay	34,600	54.06	17%
Peterson Creek-Frontal Lake Superior	4,554	7.11	2%
Ravine River	17,303	27.03	9%
Silver River	24,927	38.94	12%
Slate River	11,911	18.61	6%
Town of Pelkie-Sturgeon River	19,370	30.26	10%

Map 4: Precipitation, Appendix 4

Public Lands

The total watershed has nearly 40 square miles of public lands, which accounts for only 13% of the total watershed area. These public lands are either State or Federal and are dispersed throughout the watershed area. The land cover of this publicly owned land is primarily forest land of a mix of northern deciduous and coniferous trees.

Map 5: Public Land, Appendix 5

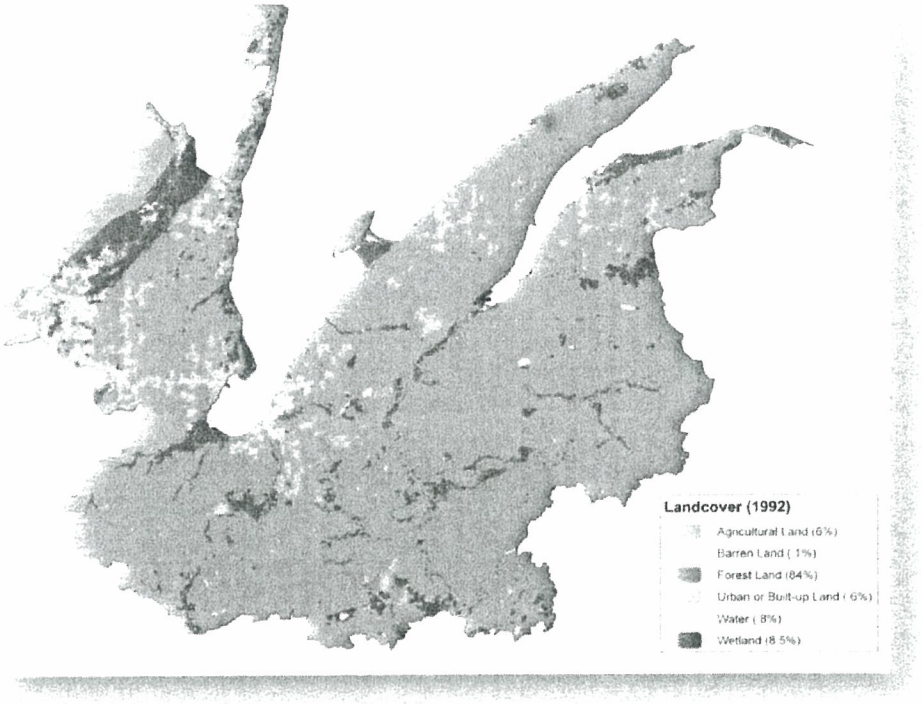
Table 2: Public Lands

Ownership	Acres in Watershed	% in Watershed
State of Michigan	12,597	6.20%
U.S. Government	10,020	5%

Land Cover

The terms land cover and land use tend to be interchangeable. However there are differences. Two land parcels may have similar land cover, but different land use. Land cover refers to the features that cover the land. For example, the land covered by trees, water, or by buildings. The land cover within the project area is primarily forest land accounting for 84% of the coverage, followed by wetland at 8.5%. Land use refers to how land is used by humans. That is, economic use to which land is placed. For an example, forest land used for recreational purposes or commercial forestry or even residential.

The land uses that were depicted within the project area were agriculture and golf course within 1,000 ft of a water body. We saw these land uses as resource concerns which is shown in the resources concern portion of the assessment.



Map 6: Land Cover, Appendix 6

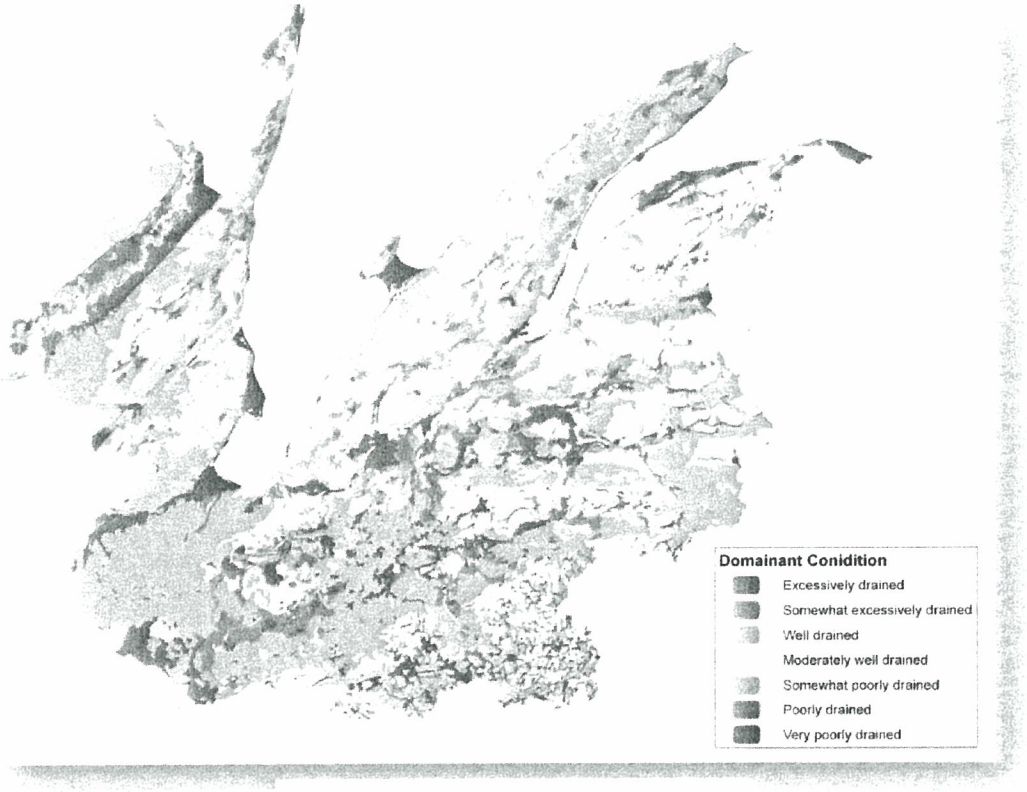
Table 3: Land Cover Classification

Land Cover	Acres in Watershed	% of Watershed
Agricultural	12,849	6.0%
Barren Land	15	0.1%
Forest Land	174,943	84.0%
Urban or Built up Land	1,240	0.6%
Water	1,722	0.8%
Wetland	18,059	8.5%

Soil Drain Classification

Drainage class refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage shown in Map 7 "Soil Drain Classification" are recognized and are defined in the "Soil Survey Manual".



Map 7: Soil Drain Classification, Appendix 7

Table 4: Soil Drain Classification

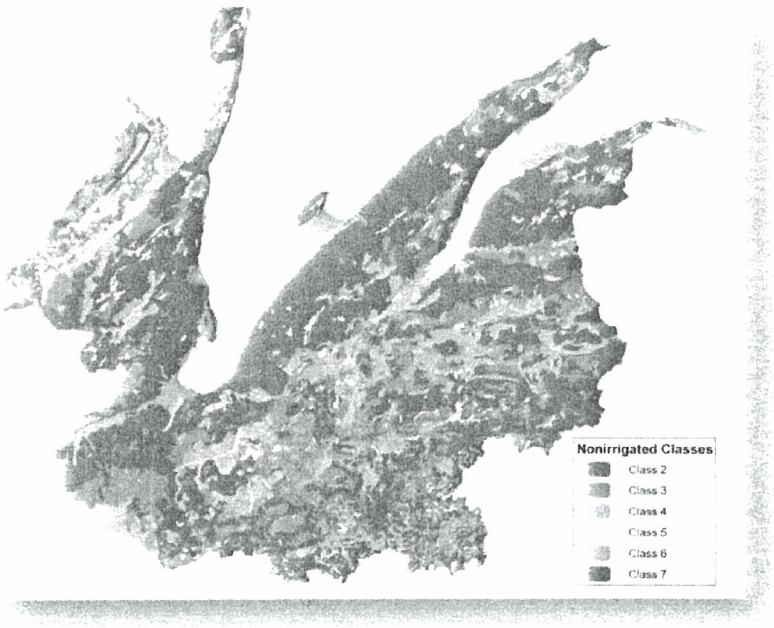
Domainant Condition	Acres in Watershed	Sq Miles	% of Watershed
Excessively drained	7,231	11.2	3.5%
Somewhat excessively drained	8,165	12.7	4.0%
Well drained	63,912	99.8	31.1%
Moderately well drained	77,187	120.6	37.6%
Somewhat poorly drained	25,484	39.8	12.4%
Poorly drained	11,549	18	5.6%
Very poorly drained	11,809	18.4	5.8%

Land Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, forestland, or engineering purposes.

Class codes 1,2,3,4,5,6,7, and 8 are used to represent both irrigated and non-irrigated land capability classes.

Class 1 soils have slight limitations that restrict their use.
Class 2 soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
Class 3 soils have severe limitations that restrict the choice of plants or require very careful management or both.
Class 4 soils have very severe limitations that restrict the choice of plants or require very careful management.
Class 5 soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.



Map 8: Land Capability Class, Appendix 8

Class 6 soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
Class 7 soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
Class 8 soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for esthetic purposes.

Table 5: Land Capability Class

Nonirrigated Classes	Acres in Watershed	Sq Miles	% in Watershed
Class 2	69,986	109.35	34.0%
Class 3	51,390	80.29	25.0%
Class 4	10,530	16.45	5.0%
Class 5	11,097	17.33	5.0%
Class 6	28,131	43.95	14.0%
Class 7	34,204	53.44	17.0%

Common Resource Areas

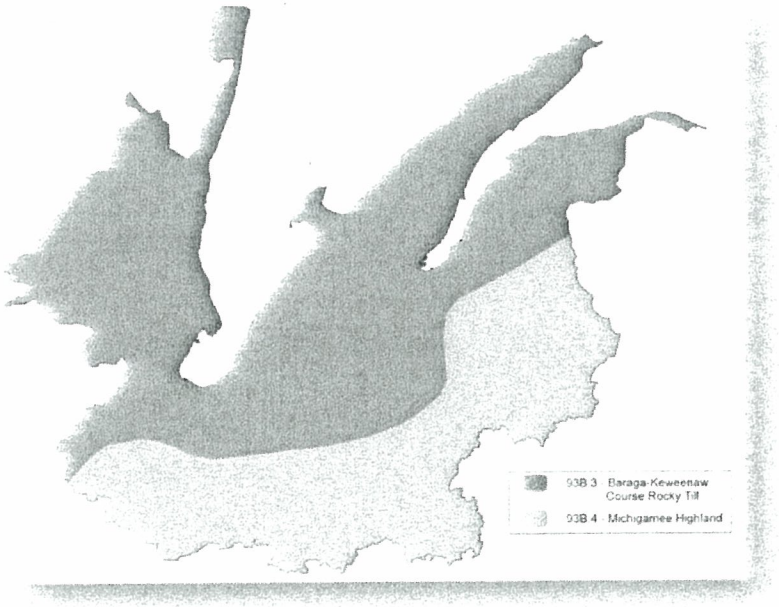
The project area consists of two common resource areas, Baraga-Keweenaw Coarse Rocky Till and Michigamee Highland (see Map 9 "Common Resource Areas").

93B.3 Baraga-Keweenaw Coarse Rocky Till

Nearly level to steep ground moraine and ridges with areas of rock outcrops. Well drained to somewhat poorly drained loamy and sandy soils predominate. Mostly deciduous and coniferous forest. The major land use is woodland and recreation. Primary resource concerns are soil erosion, groundwater quality, surface water quality, forestland productivity, erosion during timber harvest and wildlife habitat.

93B.4 Michigamee Highland

Rock outcrop and nearly level to very steep, deep and moderately deep soils on bedrock controlled uplands. Well drained to somewhat poorly drained loamy soils predominate. Dominant land use is woodland. The primary resource concerns are soil erosion, groundwater quality, surface water quality and forestland productivity.



Map 9: Common Resource Areas, Appendix 9

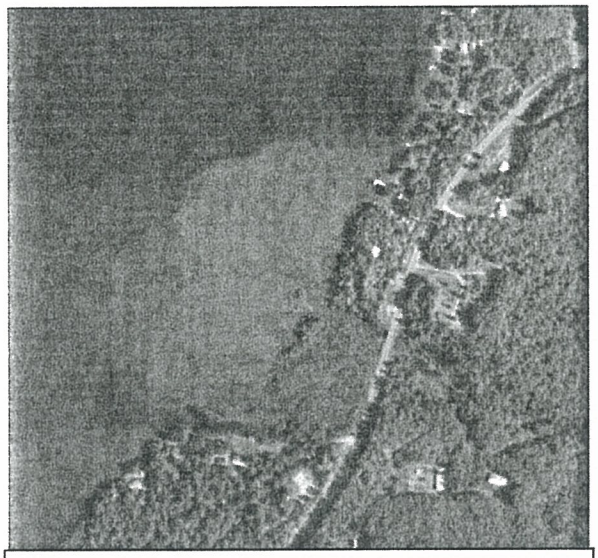
Table 6: Common Resource Areas

Common Resource Area	Acres in Watershed	Sq Miles	% in Watershed
Baraga-Keweenaw Coarse Rocky Till	133,904	196	64%
Michigamee Highland	75,177	117	36%

Resource Concerns

The main local resource concerns of this project area are fish passages on rivers and sedimentation being deposited at the mouths of rivers flowing into Lake Superior. Road crossings are known areas of sediment input if poorly constructed and drained. Sediment input into Keweenaw and Huron Bays can negatively impact spawning and other fishery habitat in the bays.

The picture to the right shows sedimentation deposit at the mouth of the Ravine River in Huron Bay.



Mouth of the Ravine River into Huron Bay

In addition to sedimentation at the mouths of streams, sedimentation within a stream system is a major concern, as sediment covers spawning gravel and other valuable habitat, causing systems to run wider and shallower, and may increase turbidity of a system, which can increase temperature. Erosion caused by wider and shallower systems removes stream bank shade and filter areas.

A major water quality concern is the industrial development in the form of potential sulfide mining activity in the Silver River watershed, and possibly other watersheds. Mineral exploration firms have been actively completing exploration activities including boreholes in the Silver and Huron River watersheds.

Additional concerns were gathered by a community survey. The results shown in Chart 2 indicate that water quality ranks high in local resource concerns.

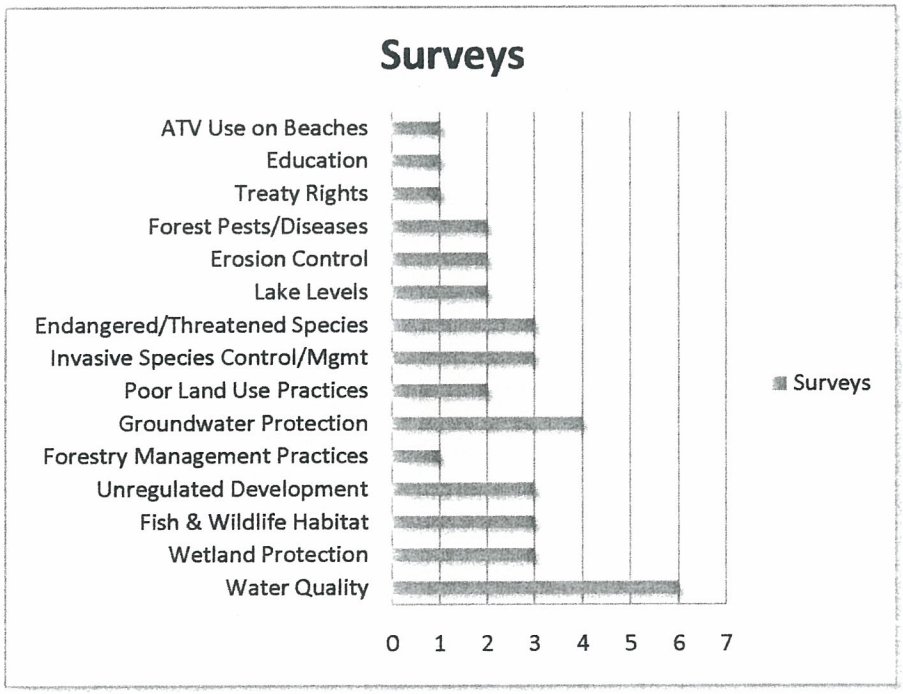


Chart 2: Survey Results

Land Use

Possible land uses of active farmland and golf courses may contribute to non-point source pollution, if adequate prevention measures are not implemented. Increasing the chemicals these land uses encounter places the natural resources of the watershed at higher risk of pollution because of their proximities to bodies of water. Farmland use may also introduce nutrients and bacteria into waters. These land uses are within 1,000 ft of a body of water and are indicated in Map 10.

Map 10: Land Use, Appendix 10

Table 7: Land Use Concerns

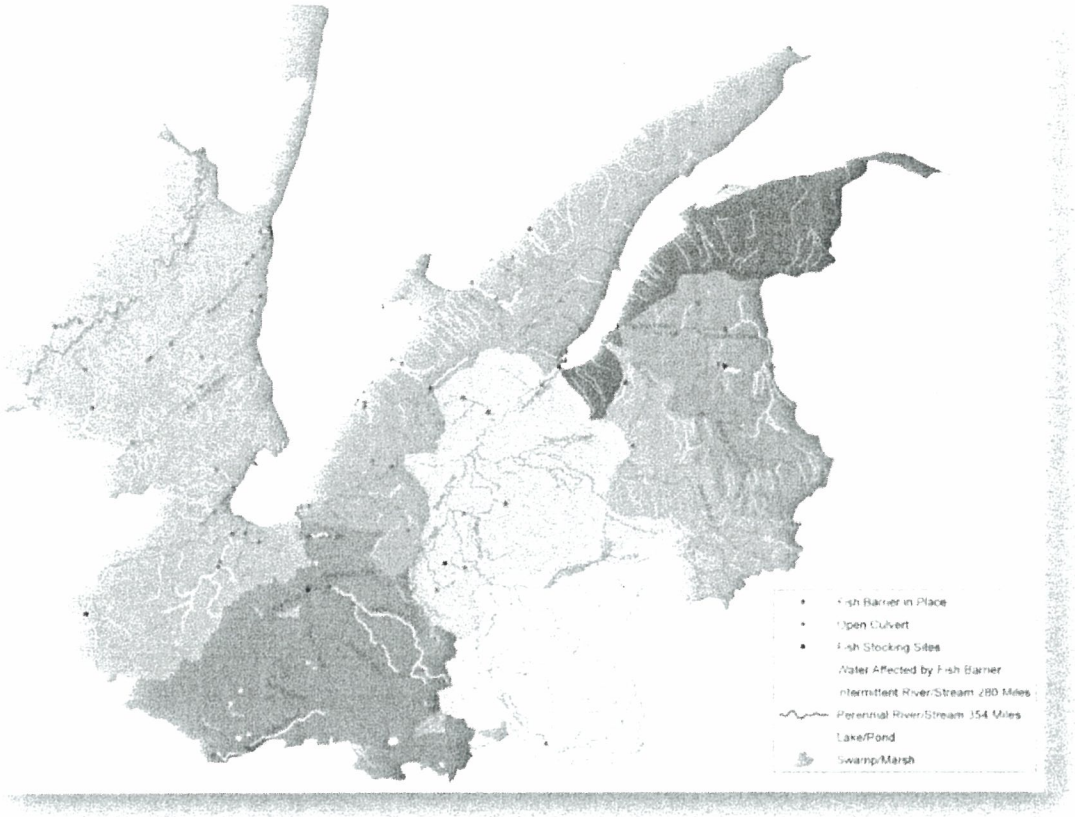
Land Use	Acres
Active Farmland	2,202
Golf Courses	58

Fish Barriers

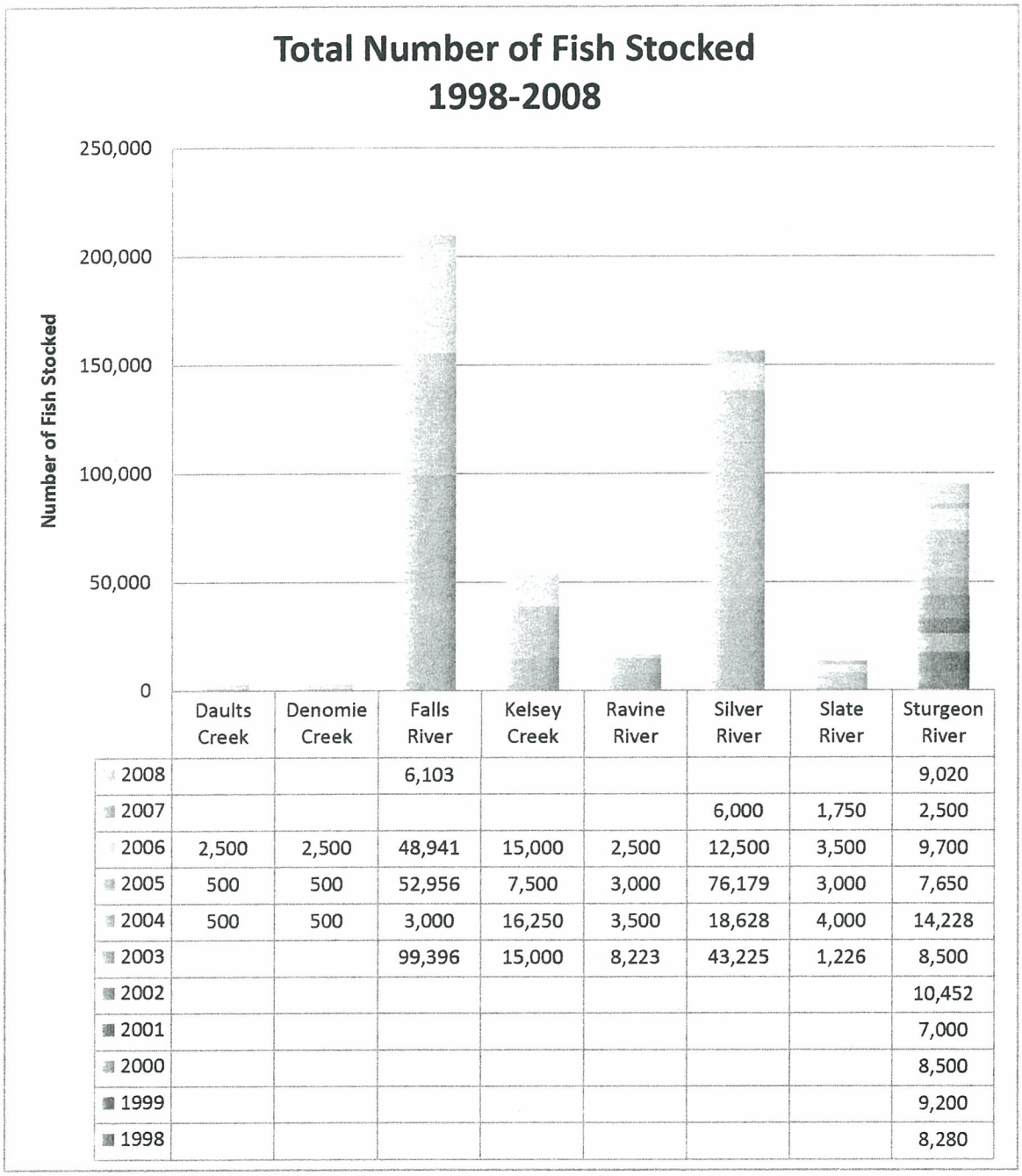
Nearly all road crossings of rivers and streams are culverts and bridges that are intended for the purpose of vehicle access. However these crossings can lead to unintended blocking of migration of fish up or down streams. Fish movement within rivers and streams are vital for maintaining healthy populations.

There are a total of 15 fish stocking points within the project area. The Michigan Department of Natural Resources and Keweenaw Bay Indian Natural Resource departments have stocked over 626,424 fish since 1998 (see Chart 3 "Fish Stocking").

A survey was taken of 92 culverts and bridges within the project area. Of these 92 culverts and bridges inventoried, 25 of the culverts had a fish barrier. These fish barriers are affecting 32 miles of perennial rivers and 19 miles of intermittent streams (see Map 11 "Fish Barriers").



Map 11: Fish Barriers, Appendix 11



	Daults Creek	Denomie Creek	Falls River	Kelsey Creek	Ravine River	Silver River	Slate River	Sturgeon River
2008			6,103					9,020
2007						6,000	1,750	2,500
2006	2,500	2,500	48,941	15,000	2,500	12,500	3,500	9,700
2005	500	500	52,956	7,500	3,000	76,179	3,000	7,650
2004	500	500	3,000	16,250	3,500	18,628	4,000	14,228
2003			99,396	15,000	8,223	43,225	1,226	8,500
2002								10,452
2001								7,000
2000								8,500
1999								9,200
1998								8,280

Chart 3: Fish Stocking

Invasive Species

Non-native species have been detected throughout the Upper Peninsula of Michigan and have an adverse affect on the natural environment. Invasive species concerns include sea lamprey, other ballast water invaders, stickleback (three and four spine), goby (tubenose and round), ruffle, Bacterial Kidney Disease (BKD), Viral Hemorrhagic Septicemia (VHS), Whirling Disease (fish diseases/viruses introduced), zebra mussels, and crayfish.

The terrestrial invasive species include buckthorn, purple loosestrife, curly leafed pond weed, spotted knapweed, toad flax, emerald ash borer, pine beetle, and others. These invasive spicies like borers, beetles and non-native plants have the potential to significantly change forest and land cover, which may alter hydrologic regimes.

Some effects of Invasive Species

- Loss of biodiversity as native species are replaced by invader species
- Harm to wildlife and fish habitat by loss of native food sources, nesting habitat, and introduction of disease
- Thick beds of invasive aquatic plants impede boat passage and pose a risk to swimmers
- Invasive plants such as European swamp thistle and Japanese barberry form spiny thickets and impede recreation and hunting access
- Non-native forest pests such as emerald ash borer and hemlock wooly adelgid threaten many forest trees

Sea Lamprey

The U.S. Fish and Wildlife Service (USFWS) Sea Lamprey Control program treats the following infested streams in the KBIC project area: the Ravine, Silver, Falls, and Sturgeon Rivers. The Slate and Six Mile Creek are two that are sometimes infested with sea lamprey and they survey these streams regularly and treat when necessary. There are a total of 72 miles of infested streams and 30 miles of moderately infested streams within the KBIC Rapid Watershed Assessment. These rivers are depicted on Map 12.

Map 12: Sea Lamprey Infested Waters, Appendix 12

Falls River

The Falls River is infested with larval sea lamprey from the mouth up to the waterfall at US-41. The bay is also infested offshore of the Falls River. The USFWS has estimated that approximately 22 acres of silt/sand habitat offshore of the Falls River is contaminated with larval lamprey.

Annual treatments occurred during 1989-1997 and were reinstituted in 2007 after lentic area surveys found extremely high densities, and larval lamprey were found in the stream. In 2008, the bay will be treated with the lampricide granular bayluscide and the stream will be treated with liquid lampricide from the mouth to US-41.

Ravine River

The Ravine River has been treated for larval sea lamprey five times since 1998, and will be treated again in 2008. The main stream is often infested up to the junction of Fossom Creek. Fossom Creek is typically infested up to Roland Lake Road. There are also 12 acres infested offshore of the Ravine and this area will be treated in 2008.

Silver River

The Silver River has been treated for larval sea lamprey nine times in the past 10 years and will be treated in 2008. None of the small tributaries are known to harbor larval lamprey. The lamprey are generally found up to the Silver Falls.

Sturgeon River

The Sturgeon River has been treated for larval sea lamprey four times in the past 10 years. Lamprey distribution on the river is usually up to the Prickett Dam and around the mouth of Clear Creek. This river is generally treated every four or five years if treatments are successful.

Summary of Assessment Matrix

The Keweenaw Bay Indian Community Rapid Watershed Assessment Matrix information was inputted by the Natural Resource Conservation Service (NRCS) Technical Team. The contributors were District and Soil Conservationist assigned to the project area that have knowledge of the local conservation practices. Assistance was also provided by the regional Resource Conservation and Development (RC&D) and State Agricultural Economist.

The team established a baseline of Conservation Practices Physical Effect (CPPE) on the land currently within the project area. These existing practices were used to identify future conditions through an estimated percent increase in participation to deal with primary resource concerns. The estimated costs to install future conservation practices are based on a cost list within the assessment matrix provided by the USDA-NRCS State Agricultural Economist (see Assessment Matrix on following page).

The assessment matrix breaks down the current conditions and forecasts future conditions and costs by estimating the increase of participation in the time frame of implementation. The total average annual costs and present value of total average annual cost over 5 years is indicated within the cost summary.

Assessment Matrix

NRCS

MICHIGAN

Watershed:
Keweenaw Bay Indian Community

Current Conditions	*Total Acres*
Total Crop/Hay/Pasture Land	*12,849*
Total Forest Land	*193,002*
Other Land Use	*2,977*
Typical Management Unit (avg farm size)	*200*
Estimated Current Farm Bill participation %	*2%*

Future Conditions	*Total Acres*
Total Crop/Hay/Pasture Land	*11,500*
Total Forest Land	*194,351*
Other Land Use	*2,977*
Total Watershed Acres with Treatment (Current & New Implementation)	*208,828*
Estimated Acres: New Implementation	*8400*
Estimated increase in Participation (potential participation in time frame for implementation).	*2%*
Total participation Future	*4%*

Cost Summary

Treatment / Investment	*Expected Installation Cost*	*Annual Maintenance Cost*	*Total Average Annual Cost of Investment*
Total Crop/Hay/Pasture Land	*$4,372,528*	*$207,083*	*$955,051*
Total Forest Land	*$2,155,334*	*$106,887*	*$411,671*
Other Land Use	*$3,362,273*	*$164,376*	*$643,388*

Cost Items and Programs	*Costs*	*O&M Costs*
Maintain the Baseline Conservation - Annual Maintenance		*$478,500*
Total Investment at estimated rate of participation	*$9,890,100*	*$478,300*
Potential Investment from Farm Bill Programs	*$4,945,050*	-
Management Incentives (Incentive Payments in yr 2 & 3)	*$650,640*	-
Total Potential Farm Bill Program Costs	*$5,595,690*	-

Operator Investment	*$4,945,100*	*$956,800*
Total Average Annual Costs	*$1,055,100*	
Present Value of Total Average Annual Costs over 5 years	*$4,583,900*	

Note:

Summary numbers rounded to even 100s	*Cost Basis: 2008*	*Discount Rate: 4.875%*	*Time Frame - Years: 5*

Total Effects Score	*1,001*

Sum of CPPE for all practices and resource concerns.

Resource Concerns Selected:	*CPPE*
Wildlife - Threatened and Endangered Fish and Wildlife Species	*29*
Wildlife - Inadequate Food	*104*
Wildlife - Inadequate Cover/Shelter	*103*
Wildlife - Imbalance Among and Within Populations	*91*
Water Quantity - Reduced Capacity of Conveyances by Sediment Deposition	*70*
Water Quantity - Insufficient Flows in Water Courses	*23*
Water Quantity - Excessive Runoff, Flooding, or Ponding	*53*
Water Quantity - Drifted Snow	*9*
Water Quality - Harmful Levels of Heavy Metals in Surface Water	*30*
Soil Erosion - Streambank	*45*
Soil Erosion - Shoreline	*47*
Soil Erosion - Sheet and Rill	*61*
Soil Erosion - Mass Movement	*17*
Soil Erosion - Classic Gully	*47*
Soil Condition - Damage from Sediment Deposition	*44*
Soil Condition - Contaminants - Salts and Other Chemicals	*33*
Plants - Wildfire Hazard	*33*
Plants - Threatened and Endangered Plant Species	*9*
Plants - T&E Plant Species: Declining Species, Species of Concern	*19*
Plants - Noxious and Invasive Plants	*134*

Footnotes/Bibliography

Hydrologic Unit Boundary maps Natural Resources Conservation Service Geospatial Data Gateway. http://datagateway.nrcs.usda.gov/GatewayHome.html

National Land Cover Data (NLCD) – Originator: United States Geological Survey (USGS). Information available http://www.mcgi.state.mi.us/mgdl/ then navigate to geographic extent, County, then 1992 National Land Cover Dataset.

Public Land information is available from Baraga County 911 department 906-524-6911.

Soil Survey Geographic Database (SSURGO) tabular and spatial data were downloaded from Natural Resources Conservation Service Geospatial Data Gateway. http://datagateway.nrcs.usda.gov/GatewayHome.html

Common Resource Area (CRA) map delineations data. http://datagateway.nrcs.usda.gov/GatewayHome.html

Population Statistics were obtained from the US Census Bureau. http://www.esri.com/data/download/census2000_tigerline/

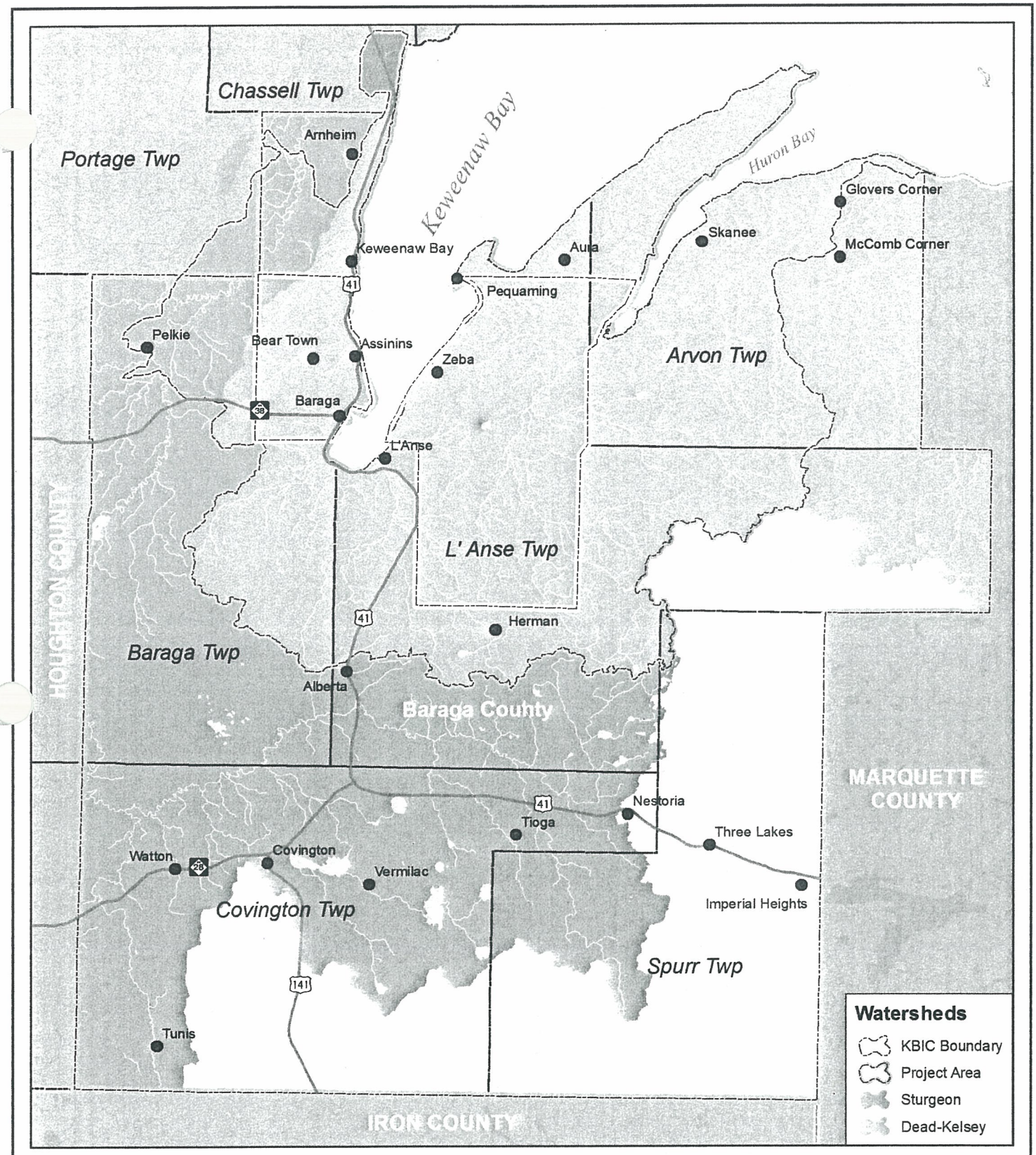
Precipitation dataset was obtained from http://datagateway.nrcs.usda.gov/GatewayHome.html

Land use dataset was derived using 2005 NAIP imagery and consisted of active farm land 1,000 ft from rivers and streams.

Fish stocking table was downloaded from the Michigan Department of Natural Resources. http://www.michigandnr.com/fishstock/

Sea Lamprey information came from the U.S. Fish and Wildlife Service, Marquette, MI

Appendix A



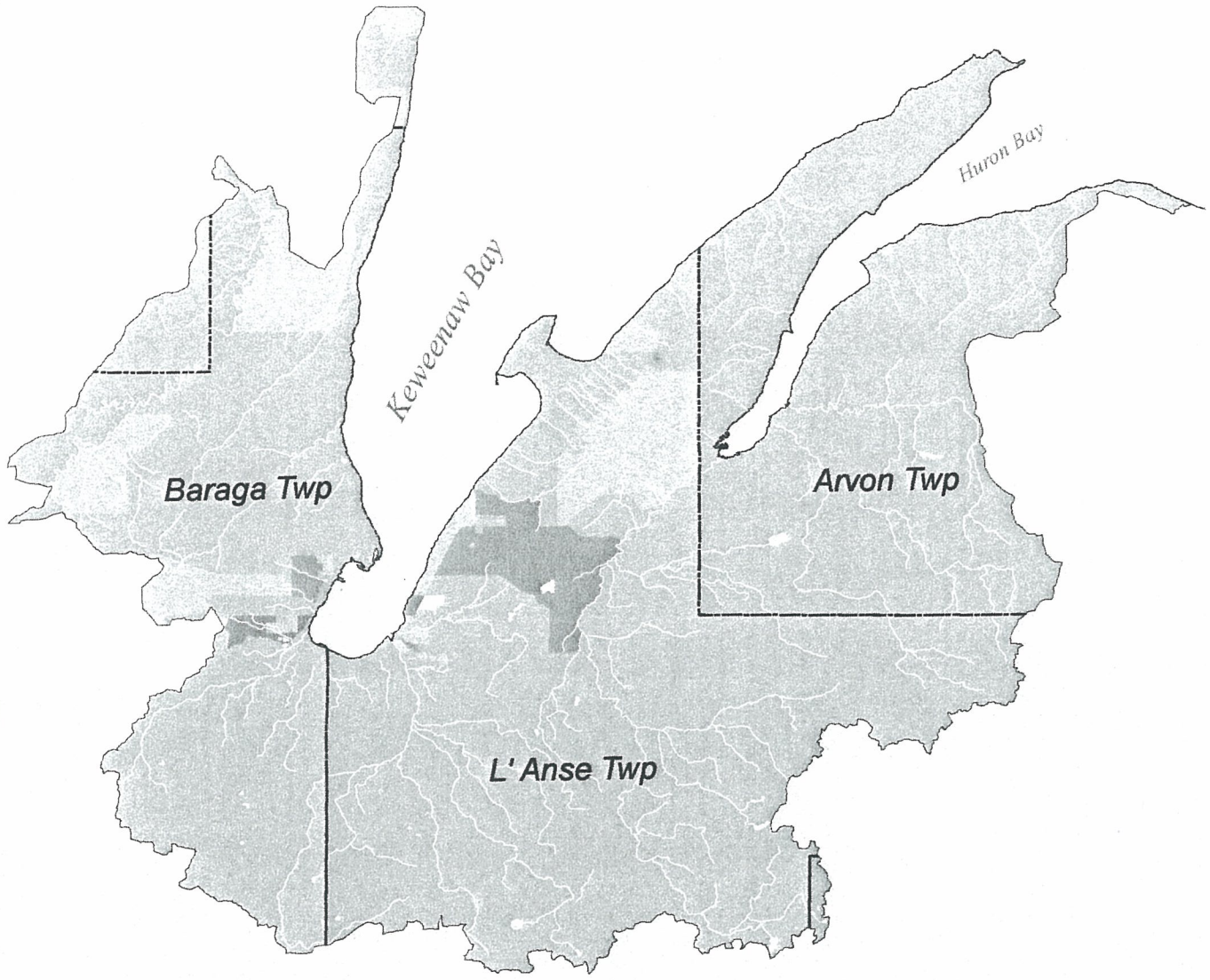
Keweenaw Bay Indian Community

Rapid Watershed Assessment

Base Map (A - 1)

WUPPDR of Michigan

Source: MCGI, USGS, KBIC



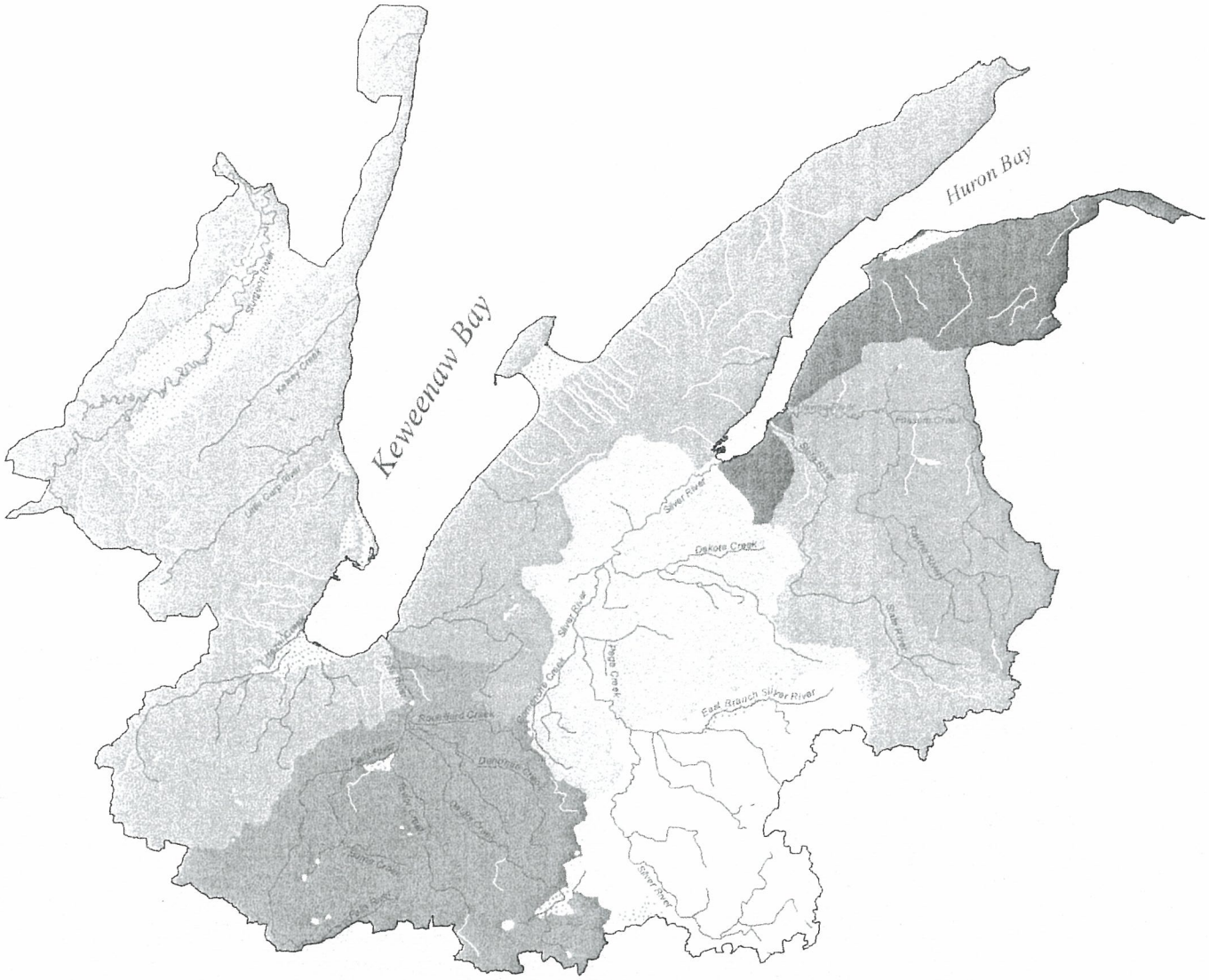
Keweenaw Bay Indian Community

Rapid Watershed Assessment

Population (A - 2)

WUPPDR of Michigan

Source: US Census



Intermittent River/Stream	Little Carp River-Frontal Keweenaw Bay
Perennial River/Stream	Little Silver Creek-Frontal Keweenaw Bay
Lake/Pond	Peterson Creek-Frontal Lake Superior
Swamp/Marsh	Ravine River
Subwatersheds	Silver River
East Branch Silver River-Silver River	Slate River
Falls River	Town of Pelkie-Sturgeon River

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Sub Watersheds (A - 3)

0 1.5 3 6

Miles

WUPPDR of Michigan

Source: USGS

Inches

- 27
- 29
- 31
- 33
- 35
- 37
- 39

N

0 1.5 3 6

Miles

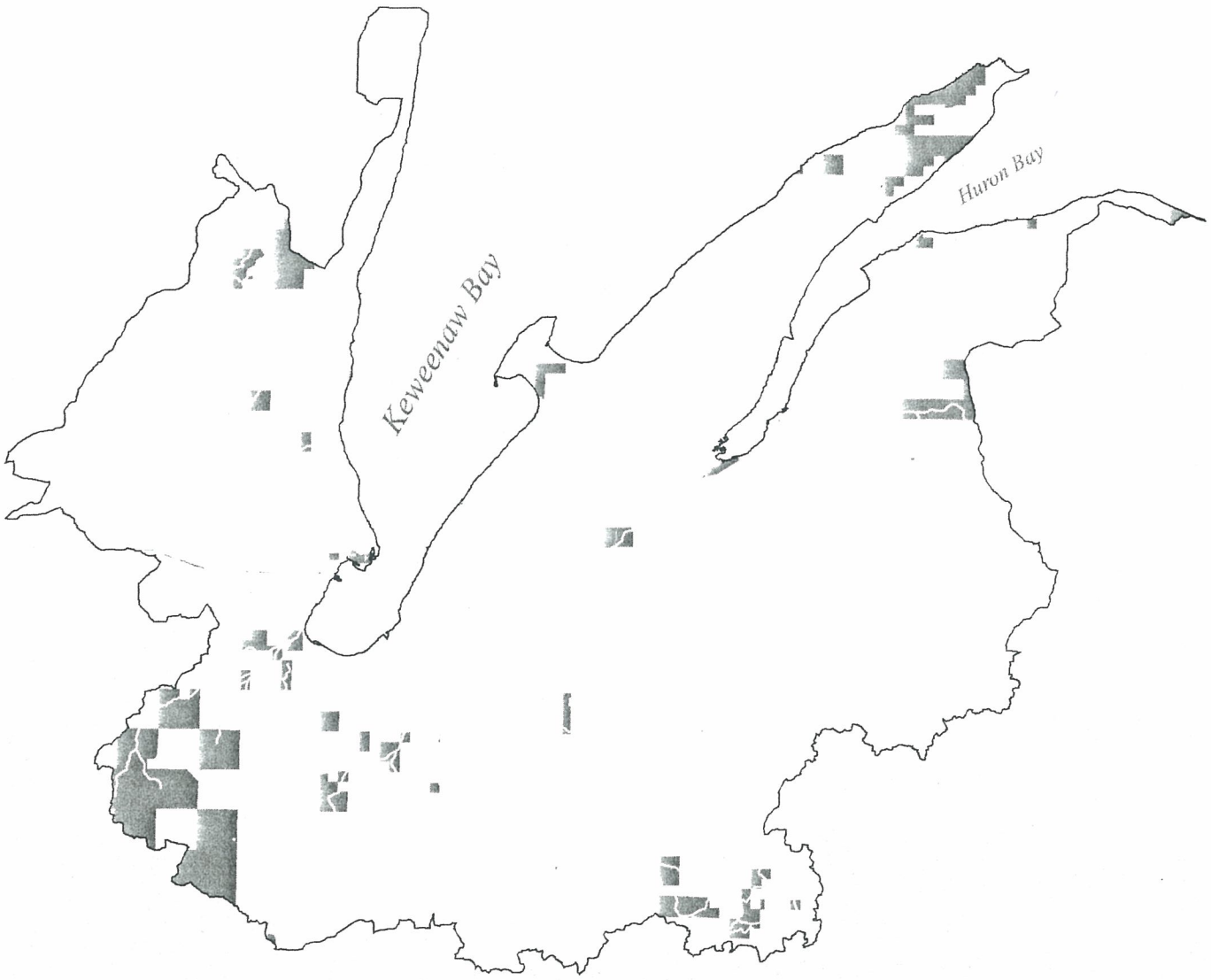
Keweenaw Bay Indian Community

Rapid Watershed Assessment

Annual Precipitation (A - 4)

WUPPDR of Michigan

Source: USDA



State of Michigan 24.2 Sq. Miles

U.S. Government 15.7 Sq. Miles

N

0 1 2 4

Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Public Land (A - 5)

WUPPDR of Michigan

Source: County

Landcover (1992)

- Agricultural Land (6%)
- Barren Land (.1%)
- Forest Land (84%)
- Urban or Built-up Land (.6%)
- Water (.8%)
- Wetland (8.5%)

N

0 1.5 3 6

Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Land Cover (A - 6)

WUPPDR of Michigan

Source: MCGI

Domainant Conidition

- Excessively drained
- Somewhat excessively drained
- Well drained
- Moderately well drained
- Somewhat poorly drained
- Poorly drained
- Very poorly drained

N

0 1.5 3 6

Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Soil Drain Classification (A - 7)

WUPPDR of Michigan

Source: NRCS

Nonirrigated Classes

- Class 2
- Class 3
- Class 4
- Class 5
- Class 6
- Class 7

N

0 1.5 3 6

Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Land Capability Class (A - 8)

WUPPDR of Michigan

Source: NRCS Surgo Data

93B.3 - Baraga-Keweenaw Course Rocky Till

93B.4 - Michigamee Highland

N

0 1.25 2.5 5

Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Common Resource Areas (A - 9)

WUPPDR of Michigan

Source: NRCS

Farmland
Golf Course
Intermittent River/Stream
Perennial River/Stream
Lake/Pond

N

0 1.5 3 6
Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Land Use (A - 10)

WUPPDR of Michigan

Source: USGS

- Fish Barrier in Place
- Open Culvert
- Fish Stocking Sites
- Water Affected by Fish Barrier
- Intermittent River/Stream 280 Miles
- Perennial River/Stream 354 Miles
- Swamp/Marsh

Distance of River/Stream Affected by Fish Barriers

Perennial River: 32 Miles
Intermittent Stream: 19 Miles

Subwatersheds

- East Branch Silver River-Silver River
- Falls River
- Little Carp River-Frontal Keweenaw Bay
- Little Silver Creek-Frontal Keweenaw Bay
- Peterson Creek-Frontal Lake Superior
- Ravine River
- Silver River
- Slate River
- Town of Pelkie-Sturgeon River

N

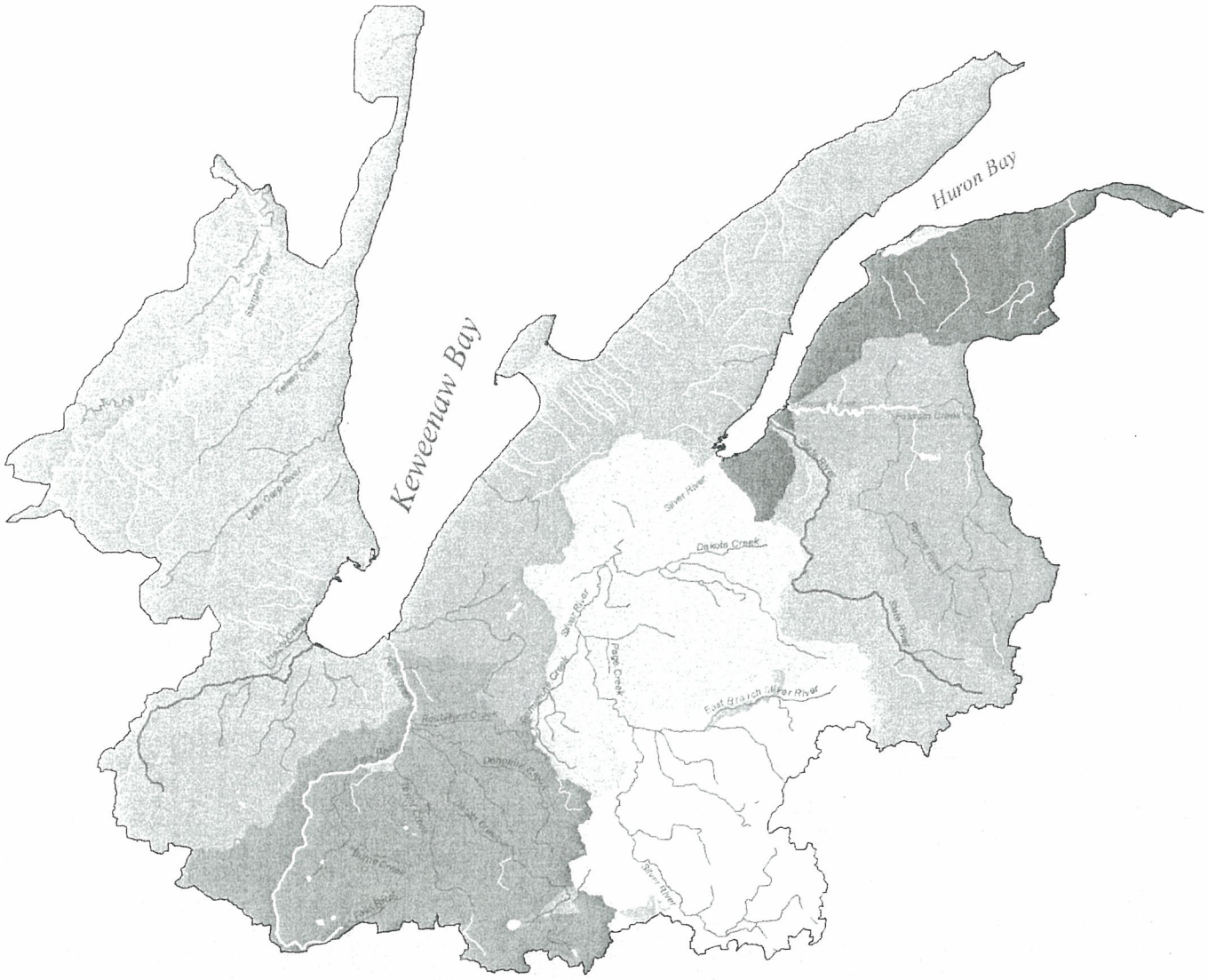
0 1.25 2.5 5
Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Fish Barriers (A - 11)

WUPPDR of Michigan



Sea Lampery Infested

Sea Lampery Infested Sometimes

Intermittent River/Stream 280 Miles

Perennial River/Stream 354 Miles

Lake/Pond

Swamp/Marsh

Subwatersheds

East Branch Silver River-Silver River

Falls River

Little Carp River-Frontal Keweenaw Bay

Little Silver Creek-Frontal Keweenaw Bay

Peterson Creek-Frontal Lake Superior

Ravine River

Silver River

Slate River

Town of Pelkie-Sturgeon River

Sea Lamprey

72 Miles of Infested
30 Miles of Moderately Infested

N

0 1 2 4
Miles

Keweenaw Bay Indian Community

Rapid Watershed Assessment

Sea Lamprey Infested Waters (A - 12)

WUPPDR of Michigan

Source: USGS

Culvert Inventory Report

Report Module: Culvert Management Analysis

Today's Date: Wednesday, January 21, 2009

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
PR No: 1192510 **Road Name:** Alatalo Rd																
Intersection: Alatalo Rd & Cadeau Rd																
17	0.09	1/1/1900	Structural Plate Steel Pipe	Circular	Kelsey Creek	Undefined	Undefined	4'	61'			1	0	32"	False	False
Description:																
Memo:																
PR No: 3070030 **Road Name:** Arvon Rd																
Intersection: Jack O Lantern Rd & Dynamite Hill Rd																
83	-0.059	1/1/1900	Structural Plate Steel Pipe	Arch	Secret Creek	Undefined	Undefined			96"	64"	1	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+															
Intersection: Dynamite Hill Rd & Bardo Rd																
26	0.079	1/1/1900	Corrugated Steel Pipe	Circular	Linden Creek	Undefined	Undefined	30"	50'			1	0	24"	False	False
Description:																
Memo:	Fisg Barrier aprox 10' upstream															
Intersection: Dynamite Hill Rd & Arvon Rd & Indian Rd																
27	0.806	1/1/1900	Structural Plate Steel Pipe	Circular	Pages Creek	Undefined	Undefined	18"	30'			2	0	42"	False	False
Description:																
Memo:	Both culverts same size															
Intersection:																
28	2.172	1/1/1900	Corrugated Steel Pipe	Circular	Pages Creek	Undefined	Undefined	3'	21'			1	0	20"	False	False
Description:																
Memo:	Upstream Side Mild crush of pipe															
Intersection: Huron Bay Peshekee Grade Rd & Arvon Rd																
	3.149	1/1/1900	Undefined	Undefined	Undefined	Undefined	Undefined					0	0		False	False
Description:																
Memo:																
89	3.149	1/1/1900	Other	Other	Slate River	Undefined	Undefined		14'	30'	7'	0	0		False	False
Description:																
Memo:	Bridge Steel Span															

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
Intersection: Arvon Rd & Skanee Rd																
88	-1.414	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	26"	35'			1	0	32"	False	False
Description:																
Memo:																
PR No: 1191907 **Road Name:** Aura Rd																
Intersection: Aura Rd & Heltunen Rd																
53	-0.014	1/1/1900	Other	Rectangular	Sucker Creek	Undefined	Undefined		120'	6'	6'	1	0		False	False
Description:																
Memo:	Cover 10'+ Precast Concrete Culverts															
PR No: 1192528 **Road Name:** Bay Shore Rd																
Intersection:																
65	-0.079	1/1/1900	Other	Rectangular	Kelsey Creek	Undefined	Undefined		16'	12'	5'	1	0		False	False
Description:																
Memo:	Bridge															
PR No: 3070008 **Road Name:** Bear Town Rd																
Intersection: Prison Access Rd & Lindblom Rd & Osterman Ave																
25	0.18	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	7'	200'			1	0		False	False
Description:																
Memo:																
Intersection: Linderman Rd & Bear Town Rd																
85	1.148	1/1/1900	Structural Plate Steel Pipe	Arch	Little Carp Creek	Undefined	Undefined		102'	20'	10'	1	0	6'	False	False
Description:																
Memo:																
Intersection: Cadeau Rd & Bear Town Rd																
86	-0.385	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	3'	65"			1	0	8'	False	False
Description:																
Memo:	Steel Pipe inside Plastic Pipe															
Intersection: US 41 & Bear Town Rd																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
14	-0.15	1/1/1900	Other	Horizontal Ellipse	Undefined	Undefined	Undefined		62'	7'	5'	1	0	1'	False	False
Description:																
Memo: Galvo																

PR No: 1191802 **Road Name:** Beesley Rd

Intersection: Echo Harbor Dr & Beesley Rd

48	0.461	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Undefined	Undefined	Undefined		67'	11'	64"	1	0	6"	False	False
Description:																
Memo:																

PR No: 1190506 **Road Name:** Bellaire Rd

Intersection: Froberg Rd & Narhi Rd

19	-0.201	1/1/1900	Corrugated Steel Pipe	Horizontal Ellipse	Undefined	Undefined	Undefined		81'	5'	2'	3	0	5'	False	False
Description:																
Memo: All 3 culverts same																

Intersection: M 38 & Wanttaja Rd & Bellaire Rd

23	-0.195	1/1/1900	Corrugated Steel Pipe	Horizontal Ellipse	Little Carp Creek	Undefined	Undefined		40'	8'	2'7"	1	0	22"	False	False
Description:																
Memo:																

PR No: 1191809 **Road Name:** Biltonen Rd

Intersection: Biltonen Rd & Townline Rd

49	0.479	1/1/1900	Corrugated Steel Box Culvert	Circular	Undefined	Undefined	Undefined	32"	50'			2	0		False	False
Description:																
Memo: Rust on sides and top																

PR No: 1190101 **Road Name:** Blackjack Rd

Intersection: Canadian National Railway & Blackjack Rd

6	-0.856	1/1/1900	Corrugated Steel Pipe	Circular	Falls River	Wingwalls	Projecting	11'	66'	11'	11'	2	0	32"	False	False
Description:																
Memo: West culvert alot of sedement																

Intersection:

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
5	-0.66	1/1/1900	Corrugated Steel Pipe	Pipe Arch	Daults Creek	Headwalls	Headwalls		30.5'	9'	5'	2	0	2.5'	False	False
Description:																
Memo: East Culvert Signigifant Sediment																

Intersection: Canadian National Railway & Blackjack Rd

4	-0.256	1/1/1900	Corrugated Steel Pipe	Circular	Denomie Creek	Undefined	Undefined	5'	60'	5'	5'	2	0	3'	False	False
Description:																
Memo: Fish barrier on down stream culvert Culvert not with flow of stream																

PR No: 1192601 **Road Name:** Cadeau Rd

Intersection: Alatalo Rd & Cadeau Rd

18	-0.085	1/1/1900	Corrugated Steel Pipe	Circular	Kelsey Creek	Undefined	Undefined	3'	51'		29"	0	0		False	False
Description:																
Memo:																

PR No: 1192602 **Road Name:**

Intersection: Cadeau Rd & Oliver Rd

16	0.604	1/1/1900	Other	Horizontal Ellipse	Kelsey Creek	Undefined	Undefined		61'	4'	2'	1	0	4"	False	False
Description:																
Memo: Galvo																

PR No: 3070581 **Road Name:** Celotex Rd

Intersection: Celotex Rd

64	0.233	1/1/1900	Other	Rectangular	Silver River	Undefined	Undefined		12'	17'	4'	1	0		False	False
Description:																
Memo: Bridge																

PR No: 1192504 **Road Name:** Cemetery Rd

Intersection: Cemetery Rd & Sturgeon Rd

13	0.819	1/1/1900	Other	Rectangular	Undefined	Undefined	Undefined		17'	19'	4'6"	1	0	12"	False	False
Description:																
Memo: Bridge																

PR No: 1190206 **Road Name:** Cutoff Dump Rd

Intersection: Baraga SP Service Road & Cutoff Dump Rd

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
67	-0.369	1/1/1900	Corrugated Steel Pipe	Circular	Hazel Creek	Undefined	Undefined	4'	47'			1	0	6"	False	False
Description:																
Memo:																

PR No: 1190105 **Road Name:** Denomme Rd

Intersection: Dynamite Hill Rd & Denomme Rd &

77	-0.15	1/1/1900	Corrugated Steel Pipe	Circular	Secret Creek	Undefined	Undefined	4'				1	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+															

PR No: 1191508 **Road Name:** E River Dr

Intersection: E Pine St & E River Dr

82	-0.119	1/1/1900	Corrugated Steel Pipe	Circular	Secret Creek	Undefined	Undefined	5'	54'			1	0	5'	False	False
Description:																
Memo:																

PR No: 1192003 **Road Name:** Ford Rd

Intersection: Skanee Rd & Ford Rd

45	1.18	1/1/1900	Other	Arch	Kallio Creek	Undefined	Undefined		68'	8'	80"	1	0	7"	False	False
Description:																
Memo:	GalvoAl															

PR No: 1190503 **Road Name:** Gristmill Rd

Intersection: M 38 & Gristmill Rd & Schwalm Rd

22	-0.457	1/1/1900	Corrugated Steel Pipe	Circular	Gristmill Creek	Undefined	Undefined	7'	82'			1	0	6'	False	False
Description:																
Memo:																

PR No: 1191910 **Road Name:** Haataja Rd

Intersection: Pikes Peak Rd & Haataja Rd

44	-0.755	1/1/1900	Structural Plate Steel Pipe	Arch	Undefined	Undefined	Undefined		67'	80"	45"	1	0	9"	False	False
Description:																
Memo:	Grate upstream side															

PR No: 1190504 **Road Name:** Hamar Rd

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
Intersection: Hamar Rd & Usitalo Rd																
20	-0.316	1/1/1900	Structural Plate Steel Pipe	Horizontal Ellipse	Undefined	Undefined	Undefined		46'	12'	5'6"	1	0	2'8"	False	False
Description:																
Memo:																
PR No: 1191703 **Road Name:** Huron Rd																
Intersection: Portice Rd & Huron Rd & Swanberg Rd & Lower Rd																
34	-0.663	1/1/1900	Corrugated Steel Pipe	Arch	Gulskoog Creek	Undefined	Undefined		79'	9'	6'	2	0	4'	False	False
Description:																
Memo:																
PR No: 1192008 **Road Name:** Indian Cemetery Rd																
Intersection: Roth Rd & Indian Cemetery Rd																
	-0.219	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	3'				1	0		False	False
Description:																
Memo:	Length 60'+ Cover 10'+															
Intersection:																
61	0.422	1/1/1900	Other	Circular	Undefined	Undefined	Undefined	32"	60'			0	0	16"	False	False
Description:																
Memo:	Plastic Culvert															
PR No: 1192106 **Road Name:** Indian Rd																
Intersection: Indian Rd & Herman Rd																
84	0.003	1/1/1900	Pre-Cast Concrete Pipe	Circular	Undefined	Undefined	Undefined	2'	65'			1	0	20"	False	False
Description:																
Memo:																
Intersection: Unknown Rd & Indian Rd																
	-0.339	1/1/1900	Pre-Cast Concrete Pipe	Circular	Undefined	Undefined	Undefined	16"	40'			1	0	2'	False	False
Description:																
Memo:																
PR No: 1191901 **Road Name:** Karschney Rd																
Intersection: Unknown 07 01 001																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
52	0.193	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	25"				1	0	6"	False	False
Description:																
Memo:																
PR No: 1192801 **Road Name:** Kyro Rd																
Intersection:																
21	-0.075	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	5'	41'	5'	5'	1	0	4"	False	False
Description:																
Memo:																
PR No: 3070535 **Road Name:** Lee Rd																
Intersection: Lee Rd & Dynamite Hill Rd																
76	0.141	1/1/1900	Corrugated Steel Pipe	Circular	Secret Creek	Undefined	Undefined	4'				1	0	6'	False	False
Description:																
Memo: Length 80'+																
PR No: 1192102 **Road Name:** Marksman Rd																
Intersection: Marksman Rd & Zeba Rd																
40	0.034	1/1/1900	Structural Plate Steel Pipe	Circular	Undefined	Undefined	Undefined	53"				1	0	6'	False	False
Description:																
Memo: Length 80'+																
Intersection:																
	0.155	1/1/1900	Undefined	Undefined	Undefined	Undefined	Undefined					0	0		False	False
Description:																
Memo:																
Intersection:																
39	0.164	1/1/1900	Structural Plate Steel Pipe	Circular	Undefined	Undefined	Undefined	53"				1	0		False	False
Description:																
Memo: Length 80'+ Cover 10'+ Downstream Perch 36" Water enters culvert at 90 degree angle																
PR No: 1192307 **Road Name:** Menge Rd																
Intersection: Canadian National Railway & Menge Rd																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
68	-1.091	1/1/1900	Other	Rectangular	Undefined	Undefined	Undefined		12'	22'	30"	1	0		False	False
Description:																
Memo: Bridge Steel Span																
Intersection: Canadian National Railway & Menge Rd																
69	-0.904	1/1/1900	Other	Rectangular	Undefined	Undefined	Undefined		12'	23'	39"	1	0		False	False
Description:																
Memo: Bridge Steel Span																
Intersection:																
70	0.13	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	2'	34'			1	0	16"	False	False
Description:																
Memo: Grate Upstream																
Intersection:																
71	0.139	1/1/1900	Structural Plate Steel Pipe	Circular	Undefined	Undefined	Undefined	3'	34'			1	0	12"	False	False
Description:																
Memo: Grate Upstream																
Intersection:																
72	0.532	1/1/1900	Structural Plate Steel Pipe	Circular	Boyers Creek	Undefined	Undefined	4'	35'			3	0	11"	False	False
Description:																
Memo: Other 2 culverts Cor-Steel Length 34' Size 2' Cover 27"																
PR No: 1192502 **Road Name:** Messner Rd																
Intersection:																
9	-0.145	1/1/1900	Undefined	Arch	Kelsey Creek	Undefined	Undefined		20'	11'		1	0	5"	False	False
Description:																
Memo:																
PR No: 3070667 **Road Name:** N 4th St																
Intersection: Division St & N 4th St																
81	-0.009	1/1/1900	Cast-in-place Concrete Culvert	Arch	Undefined	Undefined	Undefined			25'	7'	1	0		False	False
Description:																
Memo: Length 80'+																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
PR No: 1191301 **Road Name:** N Front St																
Intersection: N Front St & River St																
79	-0.025	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Undefined	Undefined	Undefined		24'	40'	4'	1	0		False	False
Description:																
Memo: Bridge Steel Span																
Intersection:																
78	0.008	1/1/1900	Cast-in-place Concrete Culvert	Arch	Undefined	Undefined	Undefined			30'	4'	1	0	3'	False	False
Description:																
Memo: Length 80'=																
PR No: 1193606 **Road Name:** Nelson Rd																
Intersection: Ohman Rd & Nelson Rd																
33	-0.064	1/1/1900	Corrugated Aluminum Pipe	Arch	Peterson Creek	Undefined	Undefined		40'	42"	30"	1	0	7"	False	False
Description:																
Memo:																
PR No: 1190006 **Road Name:** Nestoria Herman Rd																
Intersection: Lystila Rd & Herman Rd & Nestoria Herman Rd																
63	0.03	1/1/1900	Other	Arch	Daults Creek	Undefined	Undefined		33'	13'	55"	0	0	12"	False	False
Description:																
Memo: Steel Arch lining concrete																
PR No: 1193605 **Road Name:** Ohman Rd																
Intersection: Ohman Rd & Nelson Rd																
32	0.26	1/1/1900	Corrugated Aluminum Pipe	Arch	Peterson Creek	Undefined	Undefined		47'	4'	32"	1	0	1'	False	False
Description:																
Memo:																
PR No: 3070541 **Road Name:** Old 41																
Intersection: US 41 & Old 41 & Prison Camp Rd																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
3	1.41	1/1/1900	Corrugated Steel Pipe	Circular	Taylor Creek	Headwalls	Projecting	1'	45'	1'	1'	1	0	5'	False	False
Description:																
Memo:	Upstream Headwall Collapsed															

PR No: 1190306 **Road Name:** Old 41 Rd

Intersection: Old 41 Rd & Sturgeon Rd

11	0.229	1/1/1900	Masonry Culvert	Arch	Kelsey Creek	Undefined	Undefined		56	20'	5'6"	1	0	23"	False	False
Description:																
Memo:	Sediment Barrier Upstream Side needs to be removed Concrete Arch Culvert															

Intersection: Helberg Rd & Old 41 Rd

10	-0.016	1/1/1900	Other	Circular	Undefined	Undefined	Undefined	32"	71'	32"	32"	1	0	20"	False	False
Description:																
Memo:																

PR No: 1191606 **Road Name:** Paulson Rd

Intersection:

29	0	1/1/1900	Other	Other	Ravine River	Undefined	Undefined		12'	41'	7'	0	0	0	False	False
Description:																
Memo:	Bridge															

PR No: 1191304 **Road Name:** Pequaming Rd

Intersection: Whirligig Rd & Pequaming Rd

59	0.282	1/1/1900	Other	Circular	Undefined	Undefined	Undefined	18"	50'			1	0	8"	False	False
Description:																
Memo:	Plastic Culvert															

Intersection: Pequaming Rd & Marksman Rd

60	-0.298	1/1/1900	Structural Plate Steel Pipe	Arch	Undefined	Undefined	Undefined		51'	5'	3'	1	0	15"	False	False
Description:																
Memo:	Large Perch Downstream															

Intersection:

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
38	0.005	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	5'				1	0		False	False
Description:																
Memo:	Length 80+' approx Cover 10'+ approx															
Intersection: Johnson Rd & Pequaming Rd																
41	0.333	1/1/1900	Structural Plate Steel Pipe	Arch	Little Silver Creek	Undefined	Undefined			16'	80"	1	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+															
Intersection: Pikes Peak Rd & Pequaming Rd																
43	-0.009	1/1/1900	Structural Plate Steel Pipe	Circular	Undefined	Undefined	Undefined	53"				1	0	4'	False	False
Description:																
Memo:	Length 80'+ Stream enters 45 degrees plus															
Intersection: Pequaming Rd & Aura Rd																
58	0.132	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	24"	50'			1	0	5"	False	False
Description:																
Memo:																
Intersection:																
57	0.189	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	24"	46'			1	0	9"	False	False
Description:																
Memo:	Downstream side pipe crushed Grate on upstream side															
Intersection: Pequaming Rd & Second Sand Beach Rd & Ford Dr																
56	-0.374	1/1/1900	Pre-Cast Concrete Pipe	Circular	Undefined	Undefined	Undefined	16"	45'			1	0	1'	False	False
Description:																
Memo:																
Intersection: Pequaming Rd & Aura Rd																
	0.911	1/1/1900	Undefined	Undefined	Undefined	Undefined	Undefined					0	0		False	False
Description:																
Memo:																
Intersection: Pequaming Rd & Second Sand Beach Rd & Ford Dr																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
55	-0.077	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Undefined	Undefined	Undefined		47'	13'	4'	1	0	1"	False	False
Description:																
Memo:																

PR No: 1191909 **Road Name:** Pikes Peak Rd

Intersection: Pikes Peak Rd & Pequaming Rd

42	0.383	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	2'				1	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+ Dumping around and in stream Trash and animal carcases both sides in stream															

PR No: 1192104 **Road Name:** Poor Farm Rd

Intersection: Poor Farm Rd & Herman Rd

8	0.194	1/1/1900	Corrugated Aluminum Pipe	Circular	Denomie Creek	Undefined	Undefined		36.5'	3.5'	29"	0	0	6"	False	False
Description:																
Memo:																

Intersection:

7	-0.18	1/1/1900	Corrugated Aluminum Pipe	Circular	Pekkala Creek	Projecting	Projecting	5'	70'	5'	5'	1	0	24"	False	False
Description:																
Memo:																

PR No: 1192306 **Road Name:** Prison Camp Rd

Intersection: Prison Camp Rd & Alberta Rd

1	-1.422	1/1/1900	Corrugated Steel Pipe	Circular	Ogemaw Creek	Projecting	Projecting	4'	36'	4'	4'	1	0	30"	False	False
Description:																
Memo:	Metal Grat on up stream culvert to keep debris out of culvert Fish Barrier Yes															

Intersection:

2	-0.273	1/1/1900	Corrugated Steel Pipe	Circular	Ogemaw Creek	Projecting	Projecting	6'	50'	6'	6'	1	0	26"	False	False
Description:																
Memo:	Fish barrier Yes Angle of Culvert not same angle of creek															

PR No: 3070601 **Road Name:** Ravine Rd

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
Intersection: Ravine Rd & Roland Lake Rd																
36	0.256	1/1/1900	Corrugated Steel Pipe	Circular	Roland Lake	Undefined	Undefined	4'	46'			1	0	10"	False	False
Description:																
Memo:																
Intersection:																
37	0	1/1/1900	Other	Other	Ravine River	Undefined	Undefined		12'	24'	78"	0	0		False	False
Description:																
Memo:	Bridge															
PR No: 1191302 **Road Name:** River St																
Intersection: N Main St & River St																
80	0.003	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Undefined	Undefined	Undefined			22'	5'	1	0	3'	False	False
Description:																
Memo:	Unknown Length Culvert runs beneath buildings 100'+															
PR No: 3070022 **Road Name:** Roland Lake Rd																
Intersection: Witz Rd & Lower Skanee Rd																
31	0.477	1/1/1900	Other	Other	Undefined	Undefined	Undefined		17'	24'	21"	0	0	0	False	False
Description:																
Memo:	Bridge Witz MArina															
Intersection: Sawmill Rd & Greenhouse Rd & Church Rd & Roland Lake Rd																
35	0.83	1/1/1900	Structural Plate Steel Pipe	Arch	Fossoms Creek	Undefined	Undefined		51'	7'	55"	3	0	32"	False	False
Description:																
Memo:	All 3 culverts have upstream grates															
PR No: 1191903 **Road Name:** Saari Rd																
Intersection:																
50	-0.424	1/1/1900	Other	Circular	Undefined	Undefined	Undefined	4'				1	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+ Galvo Culvert															
PR No: 1191604 **Road Name:** Sawmill Rd																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
Intersection: Sicotte Rd & Paulson Rd & Sawmill Rd																
30	0.649	1/1/1900	Other	Circular	Ravine River	Undefined	Undefined	3'	49'			2	0	6"	False	False
Description:																
Memo: Second Culvert 2' Size 49' Length 6" Cover Plastic both																
PR No: 1191905 **Road Name:** Second Sand Beach Rd																
Intersection: Hebbard Ave & Second Sand Beach Rd																
54	-0.53	1/1/1900	Structural Plate Steel Pipe	Circular	Undefined	Undefined	Undefined	54"				1	0		False	False
Description:																
Memo: Length 80'+																
PR No: 1192519 **Road Name:** Shippy Rd																
Intersection: Shippy Rd & Bear Town Rd																
15	0.474	1/1/1900	Other	Horizontal Ellipse	Undefined	Undefined	Undefined		58'	5'	3'	1	0	9"	False	False
Description:																
Memo: Galvo Sediment Barrier Needs Removed																
PR No: 1190214 **Road Name:** Shrine Rd																
Intersection:																
73	-0.143	1/1/1900	Corrugated Steel Pipe	Circular	Boyers Creek	Undefined	Undefined	32"	16'			1	0	1"	False	False
Description:																
Memo:																
PR No: 1192105 **Road Name:** Silver Rd																
Intersection: Indian Rd & Silver Rd																
76	0.302	1/1/1900	Other	Circular	Undefined	Undefined	Undefined	1'	30'			1	0	13"	False	False
Description:																
Memo: Steel Pipe																
PR No: 1191306 **Road Name:** Skanee Rd																
Intersection:																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
	0.008	1/1/1900	Undefined	Undefined	Undefined	Undefined	Undefined					0	0		False	False
Description:																
Memo:																
Intersection: Skanee Rd & Falls Rd																
46	0.201	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Kallio Creek	Undefined	Undefined			6'	6'	0	0		False	False
Description:																
Memo:	Length 80'+ Cover 10'+ Concrete rebar exposed on structure															
Intersection: Townline Rd & Skanee Rd &																
47	-0.053	1/1/1900	Other	Rectangular	Undefined	Undefined	Undefined			8'	6'	1	0	6'	False	False
Description:																
Memo:	Length 80'+															
Intersection: Thompson St & Skanee Rd																
87	-0.11	1/1/1900	Cast-in-place Concrete Culvert	Rectangular	Slate River	Undefined	Undefined		40'	70'	8'	1	0	3'	False	False
Description:																
Memo:	Bridge															
PR No: 3070699 **Road Name:** Sturgeon Rd																
Intersection: Old 41 Rd & Sturgeon Rd																
12	-0.189	1/1/1900	Masonry Culvert	Arch	Kelsey Creek	Undefined	Undefined		54'	20'	7'	1	0	3'	False	False
Description:																
Memo:	Concrete Arch Bridge Sediment Barrier needs to be removed															
PR No: 1190207 **Road Name:** Superior Ave																
Intersection: Buckland Dr & Superior Ave																
24	0.017	1/1/1900	Other	Other	Undefined	Undefined	Undefined		81'	4'	4'	1	0	6'	False	False
Description:																
Memo:	One side concrete wall One side corr steel pipe															
PR No: 1192518 **Road Name:** Tervo Rd																
Intersection:																

Culvert Inventory Report

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
66	-0.114	1/1/1900	Corrugated Steel Pipe	Arch	Undefined	Undefined	Undefined		40'	5'	3'	1	0	9"	False	False
Description:																
Memo:																

PR No: 1191906 **Road Name:** Waisanen Rd

Intersection: Koski Rd & Waisanen Rd

Culvert ID	Distance from Int:	Date Built	Type	Shape	Waterway	Entrance Structure	Exit Structure	Size	Length	Span	Rise	# of culverts	Skew Angle	Depth of Cover	Inland Lakes and Streams Act	Wetland Protrection Act
51	-0.217	1/1/1900	Corrugated Steel Pipe	Circular	Undefined	Undefined	Undefined	25"	77'			1	0	6'	False	False
Description:																
Memo:																